NOTES ON THE SOUTH AMERICAN RIPIPHORID *MACROSIAGON VITTULA* (COLEOPTERA: RIPIPHORIDAE)[1]

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ABSTRACT: A misidentification of *Macrosiagon vittula* in the literature is discussed as are its diagnostic characters, known distribution and unequal sex ratio in museum collections. Additional natural history observations and speculations are made based on its recent collection on flowers of an *Eryngium* species, putatively *E. elegans*, in eastern Paraguay.

During a recent collecting expedition to eastern Paraguay on behalf of the Division of Entomology, University of Kansas Natural History Museum, I had the opportunity to observe and collect a small series of the uncommon ripiphorid beetle *Macrosiagon vittula* (Gerstaecker) over a three day period. As there has been some unnoticed confusion in the literature regarding this species, a note addressing this problem as well as illuminating a few aspects of its natural history seems appropriate.

Macrosiagon vittula was described as *Ripiphorus vittula* by Gerstaecker (1855) from a series of six putative syntypes now deposited in the Museum für Naturkunde, Berlin. Other than catalog and checklist citations (Gemminger and von Harold 1870, Csiki 1913, Blackwelder 1944), this species has not otherwise been referred to in the literature. However, Manfrini de Brewer (1966) redescribed and illustrated *M. vittula* in her treatment of Argentinian *Macrosiagon* species but mistakenly identified it as the North American *M. lineare* (LeConte). Having examined the types and original description of *M. vittula*, the original description of *M. lineare* and 10 specimens identified by Manfrini de Brewer as *M. lineare*, I am confident of this error. Apart from mutually exclusive distributions and other, more subtle morphological differences, *M. lineare* differs from *M. vittula* in having the second metatarsomere cylindrical, not dorsally flattened as in *M. vittula*.

The redescription and identification key provided by Manfrini de Brewer (1966) are reasonably sound apart from the taxonomic misidentification and the unclear genitalic figure. Identification of *M. vittula* can be somewhat difficult due to intraspecific variation in color and size that is common for species of this genus. It can be distinguished from other South American *Macrosiagon* species by the following diagnosis: protibia with one apical spur, median lobe of pronotum without raised process, metatarsomere II dorsally flattened, vertex longitudinally narrow and arched, elytra without longitudinal excavations

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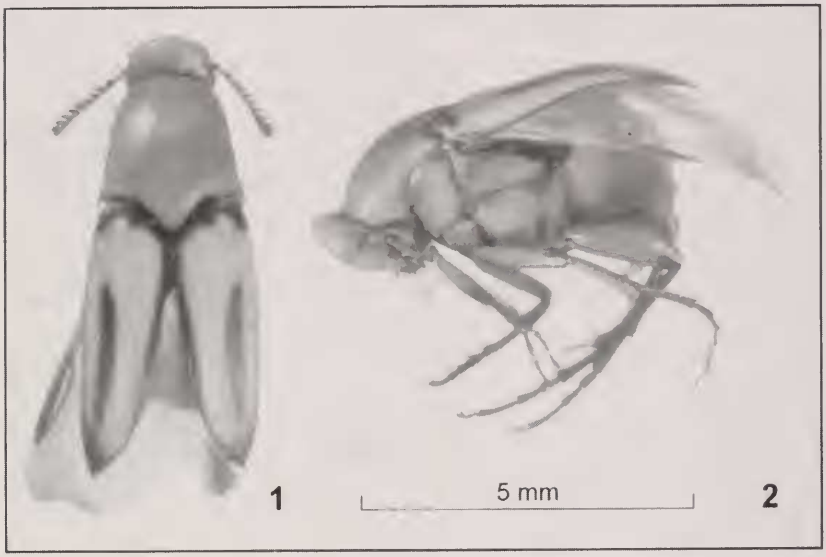
and body most commonly reddish to yellowish with black elytral markings along the suture, apices, humeri and longitudinally near the external margins (figs. 1 and 2). In a few specimens, various body regions are blackish, particularly the meso- and metathorax, and there are a few individuals with dark red to blackish, indistinctly maculated elytra.



Figs. 1 and 2. *Macrosiagon vittula*, female. 1. Dorsal view. 2. Lateral view.

After examining 36 museum specimens and observing and collecting nine individuals in eastern Paraguay, a small amount of new biological information can be presented for this species. The type locality was reported by Gerstaecker (1855) as "San Ioão del Rey", Brazil, almost certainly the city São João del Rei in Minas Gerais State. All other collections of this species were made in the following provinces and states: Jujuy and Tucumán, Argentina; Itapúa, Paraguay; and São Paulo, Brazil. One specimen was collected in "Chapada", Brazil, likely in Mato Grosso State. It appears that this species is southern tropical and subtropical in distribution, ranging into the higher, drier elevations of northern Argentina.

It is curious to note that of the 40 *M. vittula* specimens whose sex could be determined, only three were males. This female bias in museum specimens is apparent in some *Macrosiagon* species [e.g., *M. cruentum* (Germar) and *M. flavipenne* (LeConte)] but not in others [e.g., *M. excavatum* (Champion)] (pers. obv.). Given that the vast majority of *Macrosiagon* individuals are collected on flowers and assuming an even sex ratio upon hatching, one possible expla-

nation is that females of species which oviposit on inflorescences spend more time exposed and vulnerable to collection than their male counterparts, thereby becoming over-represented in collections. Species in which oviposition takes place in less exposed locations [e.g., in the crevices of soil as in *M. ferrugineum* (Fabricius) (Chobaut 1891)] would be collected in more equal numbers assuming males and females spend similar amounts of time feeding. If this is the case, censusing museum collections of various species may reveal something of their biological habits. Clearly, additional research is necessary to understand the unequal sex ratios observed in certain species of this genus.

The Paraguayan specimens were collected between 1:30 – 5:00 PM on November 27th, 28th and 29th, 2000, under hot, partly cloudy to clear conditions. The collection locality was an infrequently grazed cattle pasture adjacent to a patch of badly degraded Atlantic Forest (Paraguay: Itapúa: Reserva San Rafael, Rancho San Pedro Mí, 26°31'24"S, 55°48'18"W, 90 m). All nine specimens (eight females, one male) were collected on inflorescences of *Eryngium* [Apiaceae (= Umbelliferae of authors)], putatively *E. elegans* Cham. and Schlechtd., by visually examining the scattered plants for beetles and sweeping them from the plants once found. On November 28th, flowers in the field were inspected for beetles between 7:00 – 8:00 AM though none were found. A second *Macrosiagon* species, *M. flavipenne*, was also collected in the above manner on the same plant on the 28th. All ten *Macrosiagon* specimens, two of which are partially disarticulated (see below), have been deposited in the Snow Entomological Collection, Division of Entomology, University of Kansas Natural History Museum.

Some individuals were swept immediately upon recognition, others were observed for a few minutes before collection. Most individuals were found on the undersides of inflorescences with the apices of their abdomens touching the base of the inflorescence. A subsequent search for eggs and primary triungulin larvae or the inflorescences was unsuccessful; it is therefore unclear whether these individuals were in the act of oviposition or simply resting in a relatively protected location. Two females and the single male were found walking around on the upper surfaces of inflorescences, repeatedly inserting their mouthparts into the florets. Subsequent dissection of these two females revealed a bolus of material in what appeared to be the posterior portion of each of their midguts that occupied approximately 1/3 their abdominal volume. Under magnification, each bolus appeared to be partially digested cellular material, possibly left over from their larval meal, and not pollen as might be expected. It is generally assumed that *Macrosiagon* species consume nectar by means of their elongate galeae, though additional observations and dissections are necessary to more fully characterize the feeding habits of the adults.

Eryngium elegans occurs in Bolivia, southeastern Brazil, Paraguay, Uruguay and northern Argentina (Pontiroli 1965), a distribution nearly identical to that expected for *M. vittula*. Little is known of the plant specificity of

Macrosiagon species, and it is impossible to say whether *M. vittula* is specific only to this plant. This *Eryngium* species was by far the most attractive flowering plant to non-social wasps in the field. A second, unidentified plant also appeared attractive, but close scrutiny revealed no beetles visiting its flowers. A second species of *Eryngium*, probably *E. pandafolium* Cham. and Schlectd., examined in a nearby locality (Paraguay: Cazaapá: Reserva San Rafael, Hermosa, prop. López family, 26°18'56"S, 55°44'29"W, 80 m), however, was found to be much less attractive to wasps and no ripiphorids were collected from its inflorescences. *Macrosiagon tricuspidatum* (Lepechin) has been collected on inflorescences of *E. campestre* Linnaeus in France (Chobaut 1906) and Algeria (Cros 1920), although it is morphologically quite different from *M. vittula* and likely not closely related.

An informal survey of hymenopterans taken from the beetle-attractive *Eryngium* included individuals from the following taxa: *Dialictus* (Halictidae: Halicitinae: Halictini), *Bembicinus* (Crabronidae: Bembicinae: Stigini), *Megistommum* (Crabronidae: Bembicinae: Gorytini), *Tachysphex* (Crabronidae: Crabroninae: Larrini), *Myzine* (Tiphiidae: Myzininae) and *Tiphia* (Tiphiidae: Tiphiinae). Of these, one or both of the latter two taxa seem most likely to be the hosts of *M. vittula* considering previously published host associations for other *Macrosiagon* species and the fact that they were far more common on the *Eryngium* inflorescences than the other hymenopterous taxa. Rivnay (1929) reported that an individual specimen of *M. sayi* (LeConte) was reared from the cocoon of a *Myzine* species, probably *Myzine obscura* (Say) (= *Elis* of Rivnay), collected in Illinois, USA. The North American species *M. pectinatum* (Fabricius) has been recorded as a parasitoid of *Tiphia inornata* Say (Riley 1874, Davis 1919) while *M. octomaculatum* (Gerstaecker) was reared from a "mixed lot" of *Tiphia* cocoons collected in Illinois and Indiana (Davis 1919). *Macrosiagon* species have been associated with various crabronid wasps (Barber 1915, Hook and Evans 1991), although none appear to have been linked to *Bembicinus*, *Megistommum* or *Tachysphex*. However, just as in forage plant and ovipositional site specificity, our knowledge of host specificity of *Macrosiagon* species is scant, and it may be that any number of hymenopteran taxa are suitable hosts for *M. vittula*. Additional research, including natural history observations, will be necessary to fill the large gaps in our knowledge of these fascinating parasitoids.

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